# User manual for

# Automatic A/C-Service Unit Coolius 1000

# Art.-No. 0900 764 981

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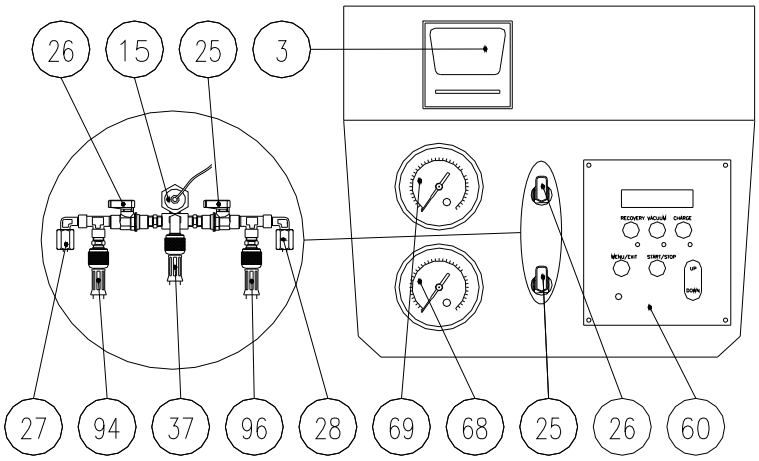
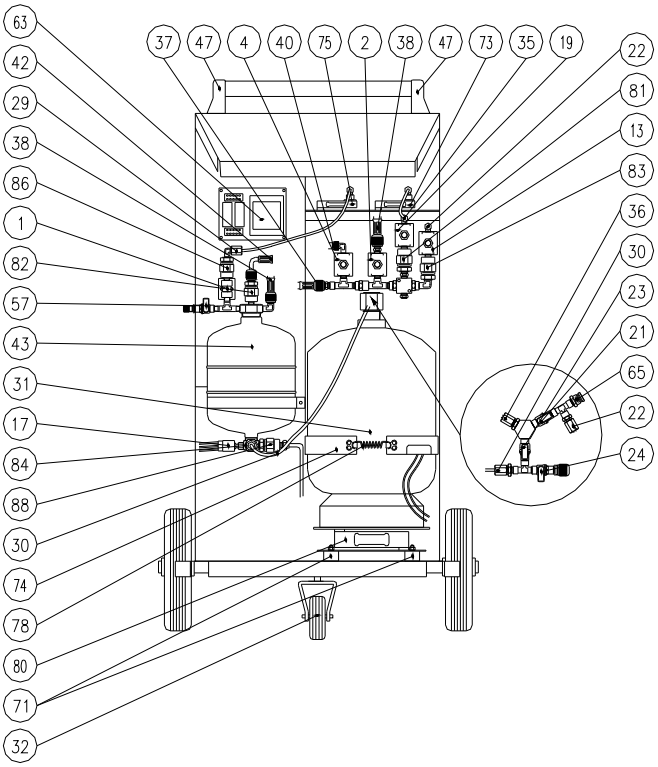
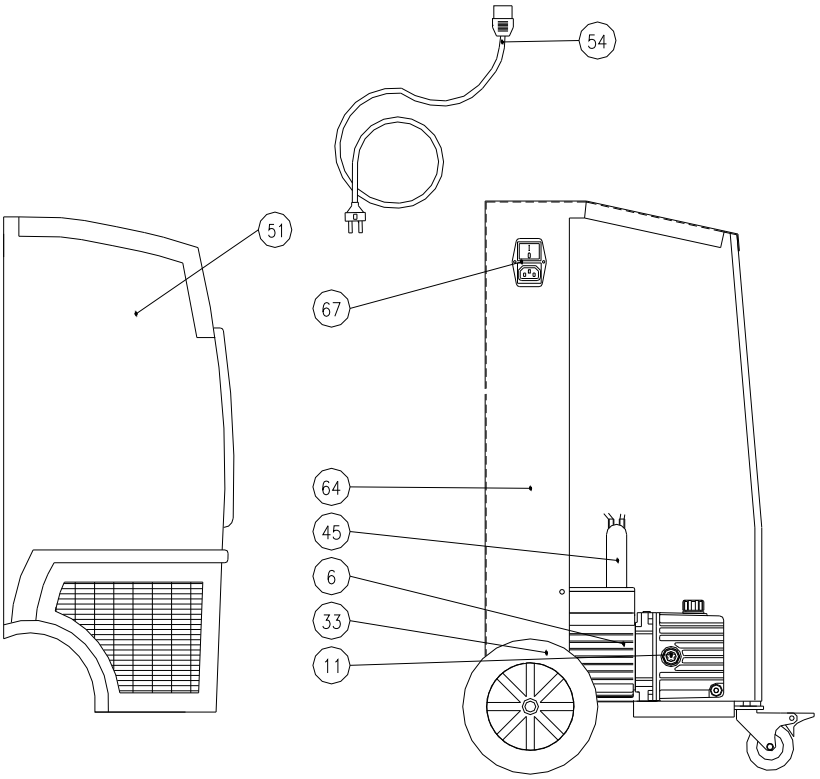
## Layout drawing

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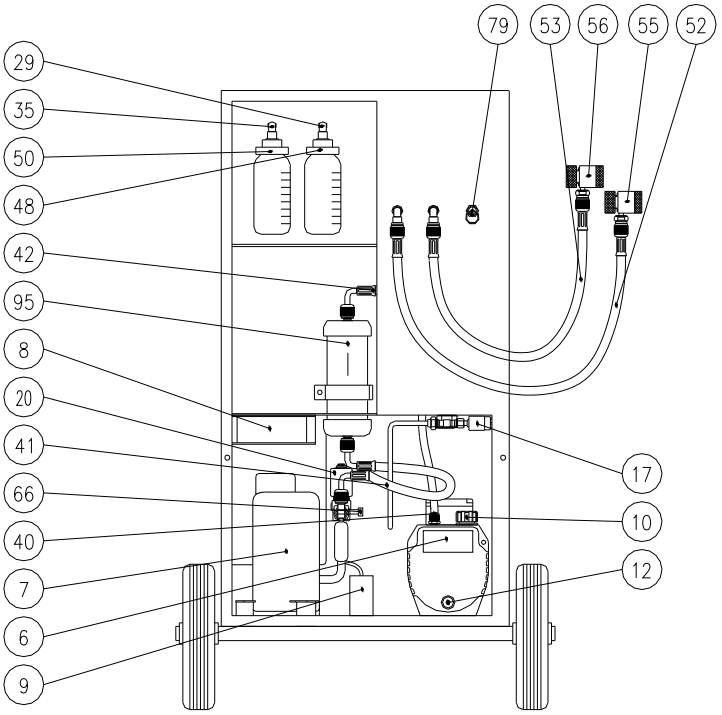
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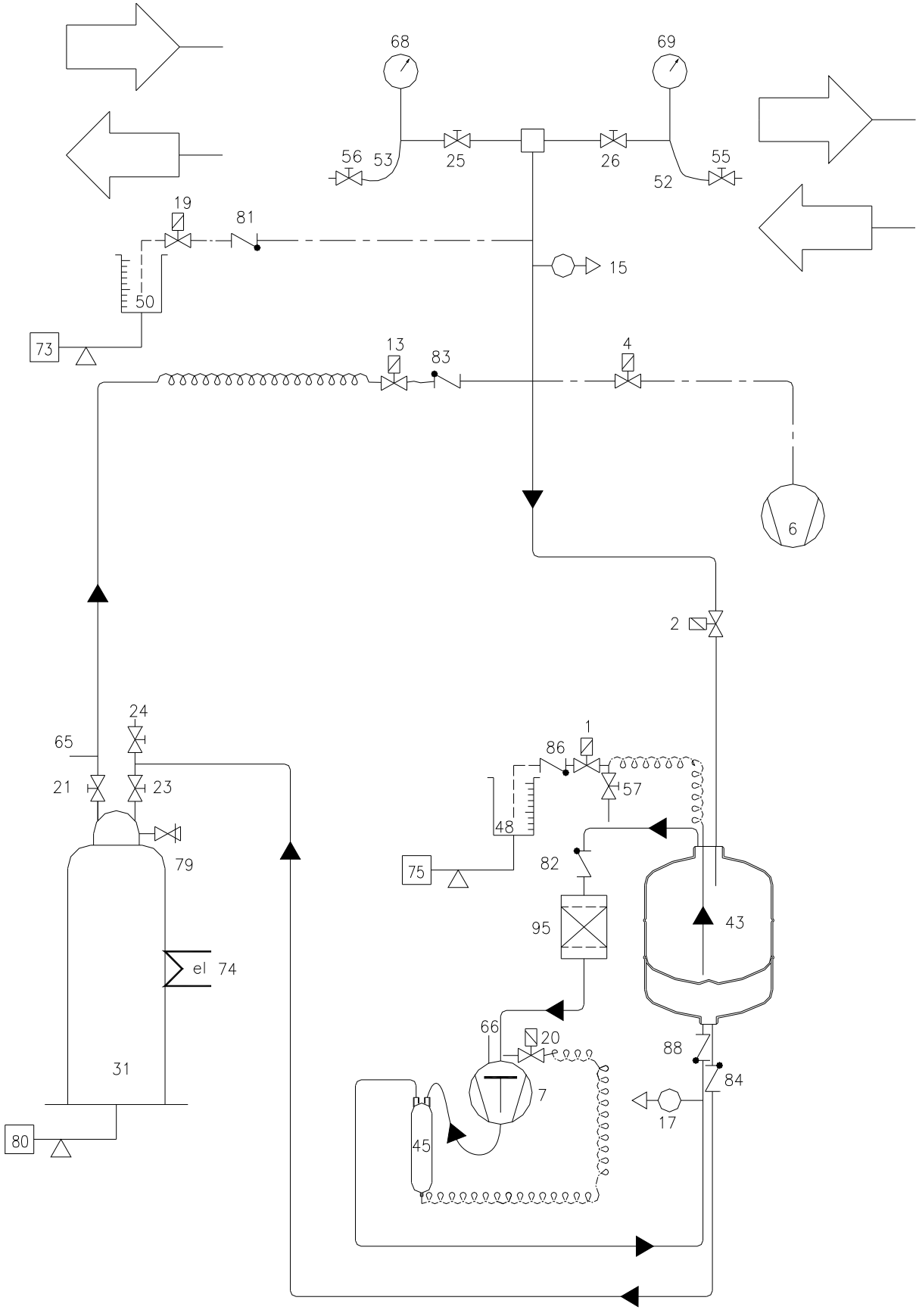
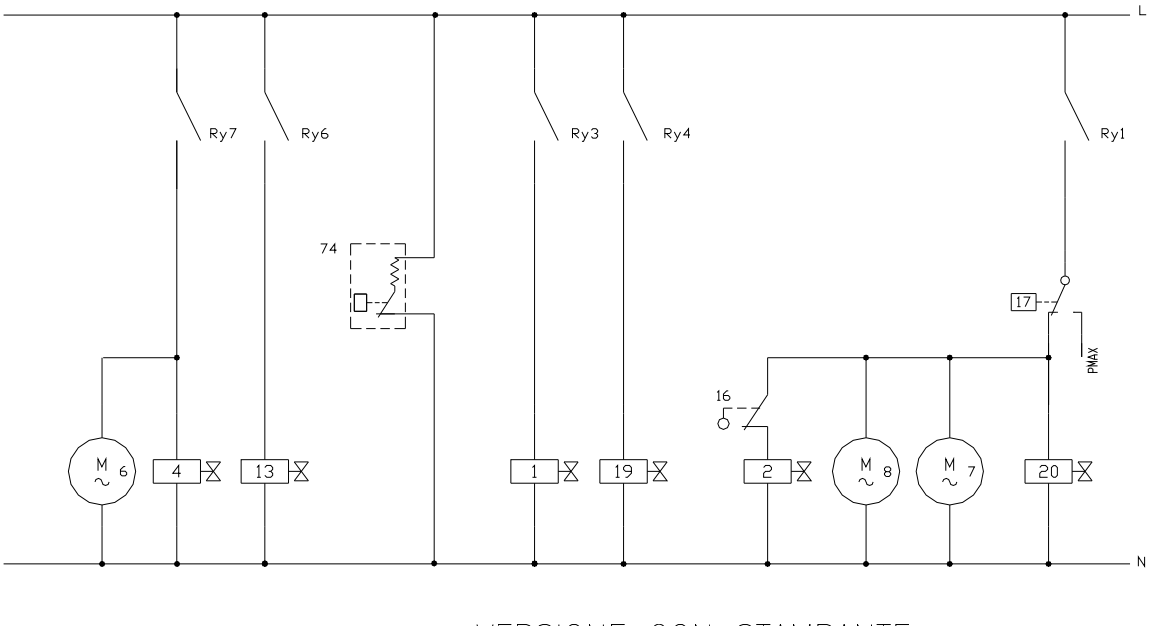
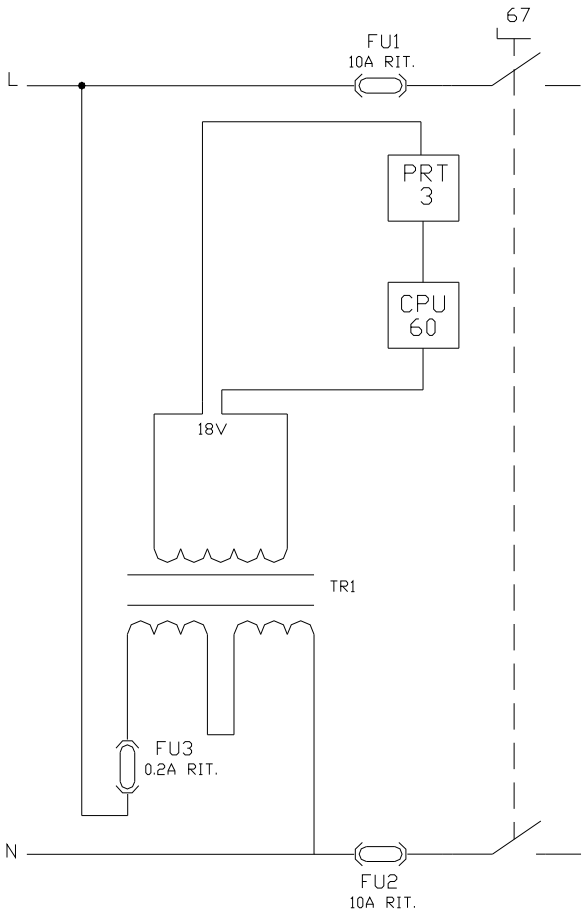
## Hydraulic diagram



## Electric diagram



## Legend

| | | | |
|---|---|---|---|
| 80 | Load cell - 100 kg (refrigerant) | 10 | Vacuum pump oil filler plug |
| 75 | Load cell - 5 kg (oil discharge) | 11 | Vacuum pump sight glass |
| 73 | Load cell - 5 kg (oil charge) | 12 | Vacuum pump oil drain plug |
| 60 | Control Board | 78 | Spring for heater belt |
| 82 | Check valve - recovery line | 17 | Safety pressure switch |
| 88 | Check valve – compressor delivery line (first) | 67 | Main power switch with socket |
| 83 | Check valve – refrigerant charging line | 22 | Refrigerant charge capillary tube |
| 86 | Check valve – oil discharge line | 21 | Liquid valve on the bottle |
| 81 | Check valve – oil charging line | 23 | Vapour valve on the bottle |
| 84 | Check valve – compressor delivery line (second) | 24 | Service valve on refrigerant bottle |
| 1 | Solenoid valve – oil discharge line | 30 | Distiller/bottle connecting capillary hose |
| 2 | Solenoid valve - recovery line | 28 | Capillary hose connecting LOW valve to LP gauge |
| 4 | Solenoid valve - vacuum line | 27 | Capillary hose connecting HIGH valve to HP gauge |
| 13 | Solenoid valve -refrigerant charging line | 29 | Oil discharge capillary tube |
| 19 | Solenoid valve –Oil charging line | 31 | Complete refrigerant bottle |
| 20 | Solenoid valve - oil return to compressor line | 32 | Front wheel with brake |
| 95 | Filter drier | 33 | Rear wheel Ø 200 |
| 25 | Manual valve - LOW | 35 | Oil injection capillary tube |
| 26 | Manual valve - HIGH | 37 | Manifold – valves assembly connecting hose |
| 68 | LP Pressure gauge | 38 | Valves assembly/Distiller connecting hose |
| 69 | HP pressure gauge | 40 | Vacuum pump hose |
| 3 | Printer | 41 | Compressor suction hose |
| 63 | Electric feeder | 42 | Distiller/filter connecting hose |
| 74 | Heater belt with thermostat on the bottle | 43 | Distiller/ separator |
| 66 | Service connection for compressor evacuation | 45 | Oil separator |
| 65 | Bottle service connection | 47 | Handle support |
| 15 | Pressure transducer | 48 | Oil discharge bottle |
| 53 | LP flexible hose | 50 | Oil charging bottle |
| 52 | HP flexible hose | 51 | Plastic cover |
| 79 | Safety valve | 64 | Frame |
| 6 | Vacuum pump | 54 | Supply cable |
| 7 | Compressor | 55 | HP quick coupler |
| 8 | Motor-fan | 56 | LP quick coupler |
| 9 | Compressor starting capacitor | 57 | Manual discharge valve on the distiller |
| 36 | Capillary tube for safety valve | 71 | Vibration-damping “feet” |

## Safety precautions

1. This equipment is designed for trained personnel only, who must know the refrigeration fundamentals, cooling systems, refrigerants and possible damage that pressurized equipment may cause.
2. Carefully read the instructions contained in this manual; strict observance of the procedures described is fundamental to the operator's safety, the perfect state of the unit and constant performances as declared.
3. The unit must always work under the operator's direct supervision
4. Do not operate the unit with different refrigerant than the one it has been designed for.
5. Before performing any operation, make sure that the hoses used for connections have been previously evacuated and that they do not contain non-condensable gases.
6. Avoid skin contact; the low boiling temperature of the refrigerant (about -30°C) can cause freezing.
7. Avoid breathing refrigerant vapours.
8. It is recommended to wear suitable protections like safety glasses and gloves; contact with refrigerant may cause blindness and other personal injuries.
9. Do not operate near open flames and hot surfaces; the high temperatures decompose the refrigerant releasing toxic and caustic substances which are hazardous for the operator and the environment.
10. Always make sure that the unit is connected to a suitably protected mains supply provided with an efficient earth connection.
11. Before performing maintenance operations or when the unit will not be used for a long period of time, turn the unit off by turning the main switch to 0 and disconnect the power supply cord; absolutely follow the sequence of operations.
12. Operate the unit only in locations with suitable ventilation and a high number of air changes.
13. Before disconnecting the unit, make sure that the cycle has been completed and that all valves are closed in order to avoid release of refrigerant to the atmosphere.
14. Never fill any tank with liquid refrigerant to more than 75% of its maximum capacity.
15. During operations avoid release of refrigerant to the environment; this precaution is required by international environmental standards and is essential to avoid difficult leak detection in a refrigerant polluted environment.
16. The equipment must always work under the operator's control.
17. Protect the unit from dripping.
18. Do not modify the calibration of safety valves and control systems.
19. If you recover refrigerant from a cooling system equipped with a water evaporator and/or condenser, it is necessary to drain water from the evaporator and/or condenser or to keep the circulation pump running during the entire recovery operation in order to avoid frosting.

# 1 Introduction to recovery unit COOLIUS-1000

Das Klimaservicegerät COOLIUS-1000 ermöglicht die schnelle und effektive Kältemittelentleerung von Klimaanlagen, die Aufbereitung von Kältemitteln, Überprüfung auf Dichtheit, Einfüllung von Additiven und Schmiermitteln, die Wiederbefüllung mit Kältemittel und die Messung von Betriebsdrücken.

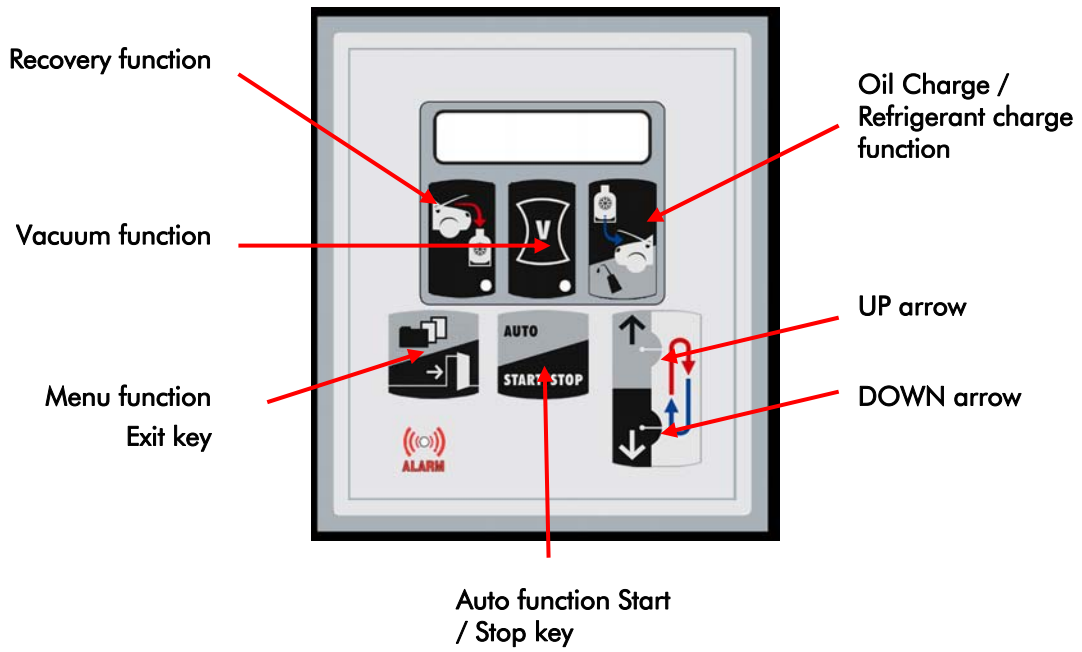
## 1.1 TECHNICAL SPECIFICATIONS

Model ..... COOLIUS-1000
Refrigerant ..... R134a
Maximum storage capacity ..... 10 kg
Maximum recovery rate ..... 0,3 kg/min
Power supply ..... 230/1/50
Power input ..... 500 W
Storage temperature ..... -10 ÷ +50 °C
Working temperature ..... 0 ÷ 40 °C
Degree of protection ..... IP24
Noise level ..... < 70dB (A)
Refrigerant max charge ..... 9 kg

## 1.2 UNIT'S COMPONENTS

| Component | Feature |
|---|---|
| Compressor | 6 cc. recovery rate 0,3 kg/min |
| Vacuum pump | Rotary vane type and single stage, 90 l/min |
| Filter direr | Dehydrating capacity of 75 PPM of water |
| Flexible hoses | L=3 meters with quick couplers |
| Fan | Axial type and high flow rate |
| Refrigerant bottle | Capacity of 7 kg with liquid and vapour connections |
| Distiller – Separator | High heat exchange distillation chamber with automatic flow control |
| Bottle for discharged oil | Capacity of 200 grams of oil, on load cell |
| Bottle for oil charge | Capacity of 200 grams of oil, on load cell |
| Control module | Fast access keys to the functions |

## 1.2 Control module



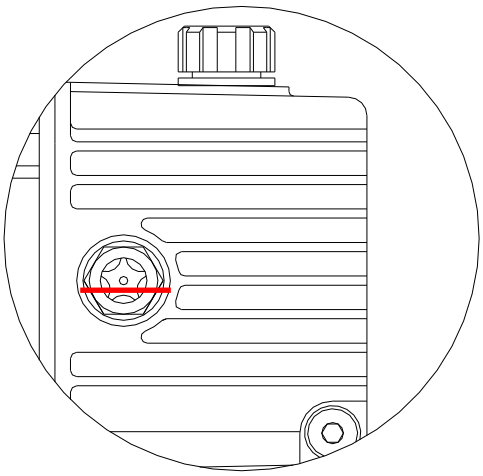

| | | |
|---|---|---|
| | Recovery | Access to the Refrigerant Recovery function |
| | Vacuum | Access to the Vacuum function |
| | Charge | Access to the oil/refrigerant charging function |
| | Menu/Exit | *Standby:* Access to the menu for the modification of the unit's settings parameters<br>*During a function setting:*<br>Back to the standby screen (during refrigerant charge, press for more than 1 second)<br>*During Refrigerant charge setting:*<br>Access to the Database |
| | Auto Start/Stop | *Standby:* Access to the automatic function<br>*During a function:*<br>Start and end of the function |
| | Up/Down | *When pressed singularly:*<br>enables to shift through the various ranges and modify the numerical values<br>*When pressed at the same time:*<br>Start of the Flushing function |

# 2 Preparing unit COOLIUS-1000 for use

## 2.1 Checking the vacuum pump oil level

Before checking the oil level, the unit must be placed on a level surface and its power supply must be **turned off.**

The user must check that the vacuum pump oil level covers half of the sight glass (see drawing below)



## 2.2 TURNING COOLIUS-1000 ON

1. Connect the unit to the power supply
2. Place the power switch (ref. 67) in position 1. When turned on, the unit will display the software version and the hardware version. Wait a few seconds in order to see the standby screen. By means of the **UP/DOWN** arrows, it is possible to shift to the second standby screen

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | 1 | 3 | 4 | a | | | | 0 | . | 0 | 0 | 0 | k | g |
| O | i | l | | i | n | | | | | | | 0 | g | . |

*Standby-screen 1*

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| O | i | l | | o | u | t | | | | | | 0 | g | . |
| | | | | | | | | | | | | | | |

*Standby-screen 2*

## 2.3 "ZERO" SCALE CHECK

1. Make sure that the unit refrigerant bottle is empty
2. Wait at least 5 minutes so that the bottle/scale assembly stabilizes before proceeding; **in case the values of scales are not equal to 0, perform the procedure by following the below steps; otherwise go to section 2.4.**
3. Proceed to the unit initial reset before the first use
4. Press the **MENU** key
5. Select **Service** by means of the **UP / DOWN** arrows.
6. Confirm by pressing the **START** key
7. Press the following keys in succession: **Vacuum, Charge, Down, Up**
8. When coming back to the Standby screen, all the scales will be placed on the value 0.

## 2.4 Filling refrigerant into the internal bottle

1. Place the bottle containing refrigerant so that liquid refrigerant will come out (bottle with tube upright, bottle without tube upside down)
2. Remove the valve ref. **55** (red valve) from the **52** high pressure hose

3. Connect the **52** hose to the refrigerant bottle
4. Open the HIGH valve ref. **26** and close the LOW valve ref. **25**
5. Press the **Vacuum** key on the control module
6. Set a vacuum time of 5 minutes by means of the **UP/DOWN** arrows

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| V | a | c | u | u | m | | | | | | | | | |
| T | i | m | e | | | | | | | | | | 5 | ' |

7. Press the START key to start the function
8. Once the vacuum cycle is completed, slowly open the valve on the bottle containing refrigerant
9. Press the Recovery key
10. Set the refrigerant quantity to recover (we suggest a quantity of 3.000 kg) by means of the UP/DOWN arrows

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | e | c | o | v | e | r | y | | | | | | | |
| R | 1 | 3 | 4 | a | | | | | 3 | . | 0 | 0 | k | g |

11. Press the START key to start the function
12. Wait until the recovery cycle is completed. A sound signal will let the user know that the cycle is over.
13. Close the valve on the bottle containing refrigerant
14. Start a recovery cycle with ALL set

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | e | c | o | v | e | r | y | | | | | | | |
| R | 1 | 3 | 4 | a | | | | | | | | A | l | l |

15. Wait for the end of the cycle
16. Disconnect the hose of the bottle
17. Re-place the valve ref. **55** on the hose end

⚠ ***IMPORTANT!*** Perform a vacuum cycle for 2 minutes

# 3 Using COOLIUS-1000 unit

## 3.1 Refrigerant recovery

⚠ *WARNING!* During recovery, regulate the LOW and HIGH valves on the control panel, so that the input pressure never rises over 5 bar..

1. Turn on the engine with closed hood
2. Turn the air-conditioner on and have it run for some minutes
3. Open the hood and set the air-conditioner fan to maximum speed
4. Have the vehicle engine run slowly (800 - 1200 revolutions/min) for a few minutes
5. Turn the vehicle engine off and have the air-conditioner fan run at maximum speed and start the recovery operations
6. Connect the hoses to the A/C system which needs a maintenance
7. Open the LOW (ref. 25) and HIGH (ref. 26) valves according to how the connection on the system was made
8. Press the **Recovery** key

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | e | c | o | v | e | r | y | | | | | | | |
| R | 1 | 3 | 4 | a | | | | | | | | A | l | l |

9. The unit sets the recovery function on **ALL** by default
10. Press the **START** key to start the function. During the recovery cycle, the recovered refrigerant quantity appears on the display.

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | e | c | | u | n | d | e | r | | w | a | y | | |
| R | 1 | 3 | 4 | a | | | | | 0 | . | 0 | 0 | k | g |

11. In case of emergency, it is possible to leave the function by keeping the **STOP** key pressed for more than 3 seconds.
12. During the cycle, the unit performs the automatic oil discharge.

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| O | i | l | | d | i | s | c | h | a | r | g | e | | |
| | | | | | | | | | | | | 0 | g | . |

13. Wait for the function to be completed; the quantities of recovered refrigerant and oil will appear on the display.

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | 1 | 3 | 4 | a | | | | 1 | . | 1 | 0 | 0 | k | g |
| O | i | l | | O | u | s | | | | | 1 | 0 | g | . |

⚠ *WARNING!* Do not pollute environment with oil; it is a special waste and must be disposed of according to the regulations in force.

## 3.2 Vacuum + Vacuum Test

1. Connect the hoses to the A/C system which needs a maintenance
2. Open the LOW (ref. 25) and HIGH (ref. 26) valves according to how the connection on the system was made
3. Press the **Vacuum** key.

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| V | a | c | u | u | m | | | | | | | | | |
| T | i | m | e | | | | | | | | | 3 | 0 | ' |

4. Set a vacuum time by means of the **UP/DOWN** keys. We suggest a vacuum time of at least 30 minutes.
5. Press the **START** key to start the function. (In case of emergency, it is possible to leave the function by keeping the **STOP** key pressed for more than 3 seconds)
6. When the vacuum cycle is over, the test starts to check the possible presence of leaks in the A/C system.
7. When the vacuum test is over, or if there are leaks, a sound signal will inform the user

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| V | a | c | u | u | m | | | | | | | 3 | 0 | ' |
| V | a | c | u | u | m | | s | e | s | s | | | O | K |

## 3.3 Oil / Uv

1. Connect the hoses to the A/C system which needs a maintenance
2. Open the LOW (ref. 25) and HIGH (ref. 26) valves according to how the connection on the system was made
3. Press the **Charge** key
4. Select "Oil/UV" by means of the **UP/DOWN** arrows

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| - | R | e | f | r | i | g | e | r | a | n | t | | | |
| - | O | i | l | / | U | v | | | | | | | | |

5. Set the quantity of oil to charge by means of the **UP/DOWN** arrows

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| O | i | l | | | | | | | | | | 0 | g | . |
| O | i | l | | M | a | x | | | | | | 0 | g | . |

6. The unit checks the maximum quantity that can be charged
7. Press the **START** key to start the function (In case of emergency, it is possible to leave the function by keeping the **STOP** key pressed for more than 3 seconds)
8. When the function is completed, a sound signal will let the user know that the cycle is over and the display will show the quantity of oil/UV really charged.

## Suggested quantities for refilling the A/C system with oil

According to the type of A/C system component you have replaced, you need to fill in the lubricant quantity indicated below, even if no oil has been extracted during recovery.

Evaporator: 50cc

Condenser: 30cc

Filter: 10cc

Pipes: 10cc

In any case the operator must follow the instructions of the A/C system manufacturer

## 3.4 Refrigerant Charge

1. Connect the hoses to the A/C system which needs a maintenance
2. Open the LOW (ref. 25) and HIGH (ref. 26) valves according to how the connection on the system was made
3. Press the **Charge** key
4. Select "Refrigerant" by means of the **UP/DOWN** arrows.

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| - | R | e | f | r | i | g | e | r | a | n | t | | | |
| - | O | i | l | / | U | v | | | | | | | | |

5. Set the quantity of refrigerant to charge by means of the **UP/DOWN** arrows.
6. By pressing the **MENU** key, it is possible to enter the database. You can chose between the inner database and the personal database. Shift by means of the **UP/DOWN** arrows and move forward among the screens by means of the **START** key

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | 1 | 3 | 4 | a | | | | | 0 | . | 0 | 0 | 0 | k | g |
| M | a | x | | | | | | | 6 | . | 0 | 0 | 0 | k | g |

7. The unit checks the maximum quantity that can be charged.
8. Press the **START** key to start the function (In case of emergency, it is possible to leave the function by keeping the **STOP** key pressed for more than 3 seconds)
9. When the function is completed, a sound signal will let the user know that the cycle is over and the display will show the quantity of refrigerant really charged

⚠ *IMPORTANT* The refrigerant charge cycle is performed "by steps" in order to reach a high precision. You may hear subsequent clicks" inside the unit during this phase.

## 3.5 Automatic cycle

1. Connect the hoses to the A/C system which needs a maintenance
2. Open the LOW (ref. 25) and HIGH (ref. 26) valves according to how the connection on the system was made
3. Press the **Auto** key

⚠ *IMPORTANT* Before the cycle starts, the unit will check the available volume inside the bottle. In case the total weight on the scale exceeds 4.800kg, COOLIUS-1000 unit will display the following alarm signal: "Check bottle weight".

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | u | t | o | | c | y | c | l | e | | | | | |
| S | e | t | | v | a | l | u | e | s | | | | | |

4. Set each function of the Automatic cycle by pressing the **Recovery, Vacuum** and **Charge** keys. In case one or more cycles need to be disabled, it is necessary to set the relevant function on value 0. After each function has been set, the unit will go back to the Automatic cycle screen.
5. Press the **START** key to start the cycle.
6. When the cycle is completed, the display will show the summary of all the functions performed.

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | 1 | 3 | 4 | a | | | | 1 | . | 1 | 0 | 0 | k | g |
| O | i | l | | O | u | t | | | | | 1 | 0 | g | . |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| V | a | c | u | u | m | | | | | | | 3 | 0 | ‘ |
| V | a | c | u | u | m | | t | e | s | t | | | O | K |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| O | i | l | | | | | | | | | 1 | 0 | g | . |
| R | 1 | 3 | 4 | a | | | | 0 | . | 7 | 0 | 0 | k | g |

## 3.6 Flushing

1. Connect the hoses to the A/C system which needs a maintenance
2. Open the LOW (ref. 25) and HIGH (ref. 26) valves according to how the connection on the system was made
3. Press the **UP/DOWN** keys to enter the function menu

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| V | a | c | u | u | m | | | | | | | 1 | 0 | ‘ |
| F | l | u | s | h | i | n | g | | c | y | c | l | e | 3 |

4. Set the vacuum time by means of the **UP/DOWN** arrows and press the **START** key to confirm
5. Set the number of cycles by means of the **UP/DOWN** arrows and press the **START** key to start the function
6. When the function is completed, a sound signal will let the user know that the cycle is over and the summary of the operation performed will be displayed.

⚠ ***IMPOTRANT*** At the beginning of the cycle, the unit checks the volume available inside the bottle. In case the total weight on the scale is under 4.000 kg, the unit will display the alarm message “Check weight in the bottle”. In fact, in order to perform the function, it is necessary to have at least 4.000 kg of refrigerant inside the bottle.

## 3.7 Checking A/C system operating pressures

1. Make sure that the LOW (ref. 25) and HIGH (ref. 26) valves are closed and that the power switch (ref. 67) is on position **0**
2. Connect the **53** hose to the cooling system low pressure side
3. Connect the **52** hose to the cooling system high pressure side
4. Start the compressor of the A/C system
5. Read the pressure and its corresponding evaporation temperature on the **68** pressure gauge
6. Read the pressure and its corresponding condensing temperature on the **69** pressure gauge
7. g) Compare the values with the ones suggested by the cooling system manufacturer

## 3.8 Disconnecting the unit from the A/C system

1. Disconnect the **52** hose from the A/C system with the A/C system compressor working.
2. Make sure that the **53** hose is connected to the A/C system
3. Open the LOW (ref. 25) and HIGH (ref. 26) valves in order to have all the liquid refrigerant be sucked by the A/C system
4. As soon as the pressures on the high and low pressure gauges are the same and do not exceed 2÷3 bar, disconnect the **53** hose from the A/C system
5. Perform a recovery cycle to extract the remaining refrigerant from the hoses so that the unit is immediately ready for the next operation
6. Turn the unit off (power switch **67** in position **0**)
7. Close the LOW (ref. 25) and HIGH (ref. 26) valves
8. Reposition **52** and **53** in their supports
9. Carefully screw the protective caps on the A/C system service valves
10. Using a leak detector, check the A/C system for leaks

*WARNING*: The introduction of tracer additives and the following use of a UV leak detector will make it easier to locate the point of the possible leak in the future.

## 3.9 Setting Menu

If you press the **MENU** key in the standby screen, you can gain access to the setting menu of the unit.

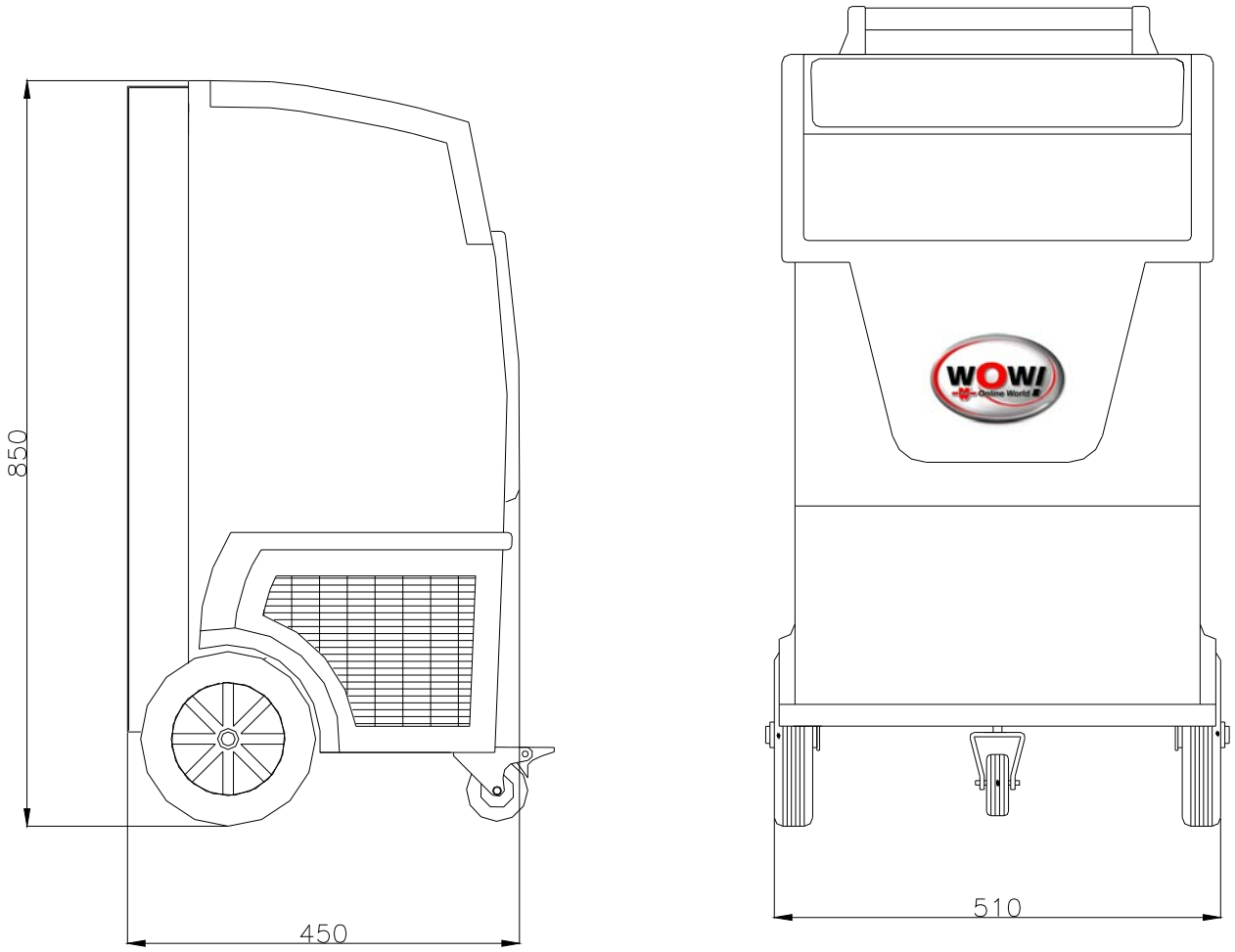
- **Car plate (*):** By pressing the START key, it is possible to type the plate of the car on which you are making maintenance. You can modify each single field by means of the UP/DOWN arrows and move forward by means of the START key. When the car plate number has been typed, press the MENU key to leave.
- **Language:** By pressing the START key, it is possible to change the language of the unit. Shift through the languages by means of the UP/DOWN arrows and confirm with START.
- **Unit of measurement:** By pressing the START key, it is possible to modify the unit of measurement (INTERNATIONAL or IMPERIAL). Shift by means of the UP/DOWN keys and confirm with START
- **Inner Database:** By pressing the START key, it is possible to make your own database. Shift onto the field you want to modify by means of the UP/DOWN keys and confirm with START. Modify each digit by means of the UP/DOWN arrows and confirm with START. Then type the value of the refrigerant charge by means of the UP/DOWN arrows and confirm with START
- **Date and Hour (*):** By pressing the START key, it is possible to set the date and hour. Modify each value by means of the UP/DOWN arrows and confirm with START.
- **Calibration**: See section 3.10 below
- **Service**: By pressing the START key, it is possible to make some service operations using several keys combinations.
  (*) With the following combination: Vacuum - Vacuum - Up - Up, it is possible to gain access to the setting of printing queue. Set by means of the Up/Down arrows and confirm each character with START. Five (5) printing lines are available on the ticket.
- **Contrast**: By pressing the START key, it is possible to modify the value of the display contrast.

*(*) Function available only in the version with printer*

# 4 Accessories and spare parts

| Part number | Description |
|---|---|
| 14015013 | XH412 anti-acid filter direr |
| 12002003 | l oil for vacuum pump |
| 14020014001 | G19020 kit of gaskets for ¼' SAE hoses - 10pcs |
| 14020015001 | G19030 kit of gaskets for 3/8' SAE hoses - 10pcs |
| 14025079 | Printer update kit |

# 5 Dimensions and weight




Net weight with empty refrigerant bottle ..... 50 kg

WOW! reserves the right to discontinue, or change at any time specifications or designs without notice and without incurring obligations according to her policy of always improving her products.

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